

PART 3

International Fuel Gas Code

Chapters 1 through 8

Chapter 1 Administration No Changes

Addressed

Chapter 2 Definitions

Chapter 3 General Regulations
Chapter 4 Gas Piping Installations

Chapter 5 Chimneys and Vents No Changes

Addressed

Chapter 6 Specific Appliances

Chapter 7 Gaseous Hydrogen Systems No

Changes Addressed

Chapter 8 Referenced Standards No Changes

Addressed

he International Fuel Gas Code (IFGC) applies to the installation of fuel gas piping systems, fuel gas utilization equipment, gaseous hydrogen systems, and related accessories. Chapter 1 provides for the administration and enforcement of the code, assigning responsibility and authority to the code official. Chapter 2 contains definitions of terms specific to their use throughout the code. The general requirement provisions of Chapter 3 govern the approval and installation of all equipment and appliances regulated by the code. Requirements for the design and installation of gas piping systems are set out in Chapter 4 and include provisions for materials, components, fabrication, testing, inspection, operation, and maintenance of such systems. The scope of Chapter 5 includes factory-built chimneys, liners,

vents, connectors, and masonry chimneys serving gasfired appliances. Reference is made to the International
Mechanical Code for chimneys serving appliances using other fuels and to the International Building Code
for the construction requirements of masonry chimneys. Approval, design, and installation of specific
appliances such as furnaces, boilers, water heaters,
fireplaces, decorative appliances, room heaters, and
clothes dryers are covered in Chapter 6. Chapter 7
covers the developing technology of gaseous hydrogen systems, including hydrogen generation and refueling operations, and provides reference to the
applicable provisions of the International Fire Code.
Chapter 8 provides a complete list of standards referenced in various sections of the code.

202, 401, 401.9, 404.10, 404.1

Identification, Testing and Certification

308.1

Clearance to Combustible Materials

404.2

CSST Piping Systems

404.18

Prohibited Devices

408.4

Sediment Trap

410.4

Excess Flow Valves

410.5, 202

Flashback Arrestor Check Valve

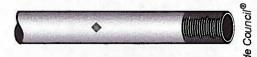
618.4

Prohibited Sources



202, 401.9, 401.10, 404.1

Identification, Testing and Certification





Each length of pipe and fittings shall bear the identification of the manufacturer

CHANGE TYPE: Addition

CHANGE SUMMARY: Each section of pipe and each fitting utilized in a gas system requires the identification of the manufacturer.

2012 CODE:

SECTION 202 DEFINITIONS

Third-Party Certification Agency. An approved agency operating a product or material certification system that incorporates initial testing, assessment and surveillance of a manufacturer's quality control system.

Third-Party Certified. Certification obtained by the manufacturer indicating that the function and performance characteristics of a product or material have been determined by testing and ongoing surveillance by an approved third-party certification agency. Assertion of certification is in the form of identification in accordance with the requirements of the third-party certification agency.

Third-Party Tested. Procedure by which an approved testing laboratory provides documentation that a product, material or system conforms to specified requirements.

401.9 Identification. Each length of pipe and tubing and each pipe fitting, utilized in a fuel gas system shall bear the identification of the manufacturer.

401.10 Third-Party Testing and Certification. All piping, tubing and fittings shall comply with the applicable referenced standards, specifications and performance criteria of this code and shall be identified in accordance with Section 401.9. Piping, tubing and fittings shall either be tested by an approved third-party testing agency or certified by an approved third-party certification agency.

404.1 Installation of Materials. All materials used shall be installed in strict accordance with the standards under which the materials are accepted and approved. In the absence of such installation instructions shall be followed. Where the requirements of referenced standards or manufacturer's installation instructions do not conform to minimum provisions of this code, the provisions of this code shall apply.

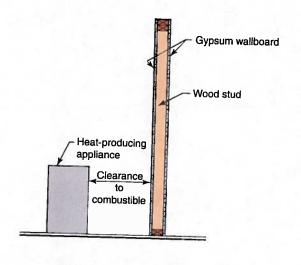
CHANGE SIGNIFICANCE: Each section of pipe, tubing, and each fitting in a gas piping system must bear the identification of the manufacturer. This is the industry method of verifying that the pipe and fittings comply with the standards recognized in the code. Provisions have also been added to provide guidance on third-party certification.

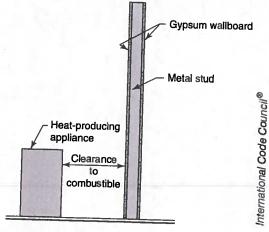
CHANGE TYPE: Clarification

CHANGE SUMMARY: It has been clarified that gypsum board is to be considered a combustible material for the purpose of required clearances, including those provisions of Section 308 addressing reductions in required clearances.

2012 CODE: 308.1 Scope. This section shall govern the reduction in required clearances to combustible materials, including gypsum board, and combustible assemblies for chimneys, vents, appliances, devices and equipment. Clearance requirements for air-conditioning equipment and central heating boilers and furnaces shall comply with Sections 308.3 and 308.4.

CHANGE SIGNIFICANCE: Gypsum board, also known as drywall, is often incorrectly thought to be a noncombustible material. Because of this misunderstanding, appliances that require a specified clearance to combustible material have not been required to maintain the required clearance to gypsum board. It has now clarified that gypsum board is to be addressed in a manner consistent with any other combustible material when reducing clearances to combustibles.





Clearance to gypsum wallboard

308.1

Clearance to Combustible Materials

404.2

CSST Piping Systems

CHANGE TYPE: Addition

CHANGE SUMMARY: CSST piping systems shall be installed in accordance with their listing and the manufacturer's installation instructions.

2012 CODE: 404.2 CSST. CSST piping systems shall be installed in accordance with the terms of their approval, the conditions of listing, the manufacturer's installation instructions and this code.

CHANGE SIGNIFICANCE: CSST gas piping systems are listed to an ANSI standard and, like other equipment and appliances, are now required to be installed in accordance with the terms of their approval, the conditions of listing, and the manufacturer's installation instructions.



Step 1 – Cut tubing and remove PE coating to expose a minimum of four corrugations.



Step 2 – Slide nut over tubing and place retainer ring. Leave one corrugation exposed on the end of tubing.



Step 3 - Slide nut over retainer and hand-tighten nut to body.



Step 4 - Tighten with wrenches until nut contacts body.

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Sample installation instructions for CSST gas piping

404.18 ■ Prohibited Devices

CHANGE TYPE: Clarification

CHANGE SUMMARY: Excess flow valves and similar devices are now permitted to be placed in gas piping systems that have been sized to accommodate the pressure drop.

2012 CODE: 404.16 404.18 Prohibited Devices. A device shall not be placed inside the piping or fittings that will reduce the cross-sectional area or otherwise obstruct the free flow of gas.

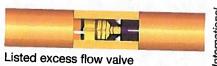
Exceptions:

- 1. Approved gas filters.
- 2. An approved fitting or device where the gas piping system has been sized to accommodate the pressure drop of the fitting or device.

CHANGE SIGNIFICANCE: Devices such as excess flow valves and earthquake valves are considered restrictions in gas piping systems and generally are prohibited from being installed in gas piping and fittings. It has now been clarified that if the gas piping system has been sized to accommodate a fitting or device placed in the gas piping system, the fitting or device is allowed to be installed.

404.18

Prohibited Devices



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408.4

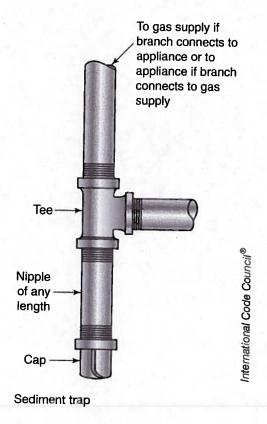
Sediment Traps

CHANGE TYPE: Modification

CHANGE SUMMARY: An illustration of a sediment trap is now included within the IFGC in order to clarify the intent of the provisions.

2012 CODE: 408.4 Sediment Trap. Where a sediment trap is not incorporated as part of the appliance, a sediment trap shall be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical. The sediment trap shall be either a tee fitting having a capped nipple of any length installed vertically in the bottommost opening of the tee <u>as illustrated in Figure 408.4</u> or other device approved as an effective sediment trap. Illuminating appliances, ranges, clothes dryers, <u>decorative vented appliances for installation in vented fireplaces</u>. gas fireplaces and outdoor grills need not be so equipped.

CHANGE SIGNIFICANCE: Because of misunderstandings as to how a sediment trap is to be constructed, an illustration has been added to the code text to clarify the intended installation method. In addition, decorative vented gas appliances and gas fireplaces are no longer required to be installed with a sediment trap. Although these appliances are susceptible to harm from debris, they are also manually operated; therefore, the user would be in attendance and aware of any problem.



CHANGE TYPE: Addition

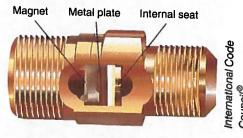
CHANGE SUMMARY: An excess flow valve must now be listed, sized, and installed in accordance with the manufacturer's instructions.

2012 CODE: 410.4 Excess Flow Valves. Where automatic excess flow valves are installed, they shall be listed for the application and shall be sized and installed in accordance with the manufacturers' instructions.

CHANGE SIGNIFICANCE: Excess flow valves are now required to be listed. In order to not cause pressure drops in the gas piping system, the excess flow valve must also be sized and installed in accordance with the manufacturer's instructions.

410.4

Excess Flow Valves



Listed excessive flow valve

202, 410.5

Flashback Arrestor Check Valve **CHANGE TYPE:** Addition

CHANGE SUMMARY: A combination flashback arrestor and backflow check valve is now required on any fuel gas system used with oxygen in any hot work operation.

2012 CODE:

SECTION 202 DEFINITIONS

Flashback Arrestor Check Valve. A device that will prevent the backflow of one gas into the supply system of another gas, and prevent the passage of flame into the gas supply system.

410.5 Flashback Arrestor Check Valve. Where fuel gas is used with oxygen in any hot work operation, a listed protective device that serves as a combination flashback arrestor and backflow check valve shall be installed at an approved location on both the fuel gas and oxygen supply lines. Where the pressure of the piped fuel gas supply is insufficient to ensure such safe operation, approved equipment shall be installed between the gas meter and the appliance that increases pressure to the level required for such safe operation.

CHANGE SIGNIFICANCE: To prevent flashbacks from occurring and prevent oxygen from getting into the gas supply system, fuel gas systems that are used with oxygen are now required to have a flashback arrestor and a backflow check valve on the gas supply line and the oxygen supply line.



Check valve and flash arrestor

CHANGE TYPE: Modification

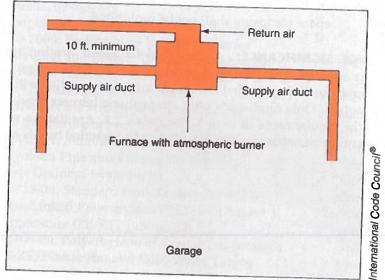
CHANGE SUMMARY: Return air may be taken from a garage provided with a dedicated forced-air system.

2012 CODE: 618.5 618.4 Prohibited Sources. Outside Outdoor or return air for forced-air heating and cooling systems shall not be taken from the following locations:

- Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
- 2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
- 3. A hazardous or insanitary location or a refrigeration machinery room as defined in the *International Mechanical Code*.
- 4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Section 618.2, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

618.4 continues



Furnace serving a garage

618.4

Prohibited Sources

618.4 continued

5. A room or space containing an appliance where such a room or space serves as the sole source of return air.

Exception: This shall not apply where:

- 1. The appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section 501.8.
- 2. The room or space complies with the following requirements:
 - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6L/W) of combined input rating of all fuelburning appliances therein.
 - **2.2.** The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
 - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of a draft hood in the same room or space or the combustion chamber of any atmospheric burner appliance firebox or draft hood in the same room or space.
- Rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.
- **6.** A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room or unconditioned attic.

Exceptions:

- 1. Where return air intakes are located not less than 10 feet (3048 mm) from cooking appliances and serve only the kitchen area, taking return air from a kitchen area shall not be prohibited.
- 2. Dedicated forced air systems serving only a garage shall not be prohibited from obtaining return air from the garage.
- 7. A crawl space by means of direct connection to the return side of a forced-air system. Transfer openings in the crawl space enclosure shall not be prohibited.

CHANGE SIGNIFICANCE: A dedicated forced-air heating system that is only serving a garage may take return air from the garage where the furnace is located, provided the return air inlet complies with item 5 in this section. Only appliances with atmospheric burners need to comply with the requirements in item 5, Exception 2.3. Appliances with closed combustion chambers are not intended to be included in this exception.